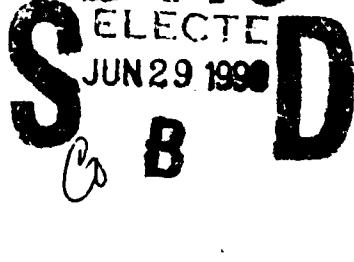


REPORT DOCUMENTATION PAGE

Form Approved
GSA No. 0700-0100

1. AGENCY USE ONLY (Leave Blank)		2. REPORT DATE 1 February 1986	3. REPORT TYPE AND DATES COVERED 7/15/84-7/14/85
4. TITLE AND SUBTITLE INTEGRATED MULTIAXIAL AND HIGH PRECISION COMPUTER CONTROLLED SERVOHYDRAULIC MECHANICAL TESTING SYSTEM		5. FUNDING NUMBERS AFOSR-84-0276	
6. AUTHOR(S) William D. Nix			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(S) Department of Materials Science and Engineering Stanford University, Stanford, California 94305		8. PERFORMING ORGANIZATION REPORT NUMBER 61102F 2917/A3	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(S) AFOSR BLDG 410 BAFB DC 20332-6448		10. SPONSORING/MONITORING AGENCY REPORT NUMBER AFOSR-TR-111 0741	
11. SUPPLEMENTARY NOTES			
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited.		12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 400 words) An electronically controlled, hydraulically actuated multiaxial (tension - torsion) mechanical testing system has been purchased from MTS and installed in the Petersen Laboratory at Stanford University. The instrument is controlled by a DEC computer. The equipment was made operational in September 1985 and is now available for use.			
			
14. SUBJECT TERMS		15. NUMBER OF PAGES 3	
		16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT unclassified		18. SECURITY CLASSIFICATION OF THIS PAGE unclassified	
		19. SECURITY CLASSIFICATION OF ABSTRACT	
		20. LIMITATION OF ABSTRACT	

NSN 7540-01-280-5500

Standard Form 198 (1961)04 (Rev.)
Approved by GAO 1961 MAR 25-18
GSA GEN. REG. NO. 1

Final Report
for
Grant No. AFOSR-84-0276
Integrated Multiaxial and High Precision Computer Controlled Servohydraulic Mechanical Testing System

Submitted to:

**AFOSR/DOD-URIP
Building 410, Room C216
Bolling Air Force Base, D.C. 20332
Attention: Dr. Alan H. Rosenstein**

Submitted by:

**Professor William D. Nix
Department of Materials Science and Engineering
Stanford University, Stanford, CA 94305**

February 1, 1986

This grant was awarded as a part of the DOD-University Research Instrumentation Program. The equipment awarded is an Automated Axial-Torsional Testing System complete with grips, extensometers and associated instrumentation. Also included in the award is a SX-RA50-EX (PDP 11/23) Microcomputer for control of the testing system. As required by the grant, cost sharing has been provided by Stanford University. Table 1 is a list of the equipment provided by this grant, together with an account of the cost sharing provided.

The testing equipment was purchased from MTS Corporation and the microcomputer from Digital Equipment Corporation. The equipment arrived at Stanford University in June of 1985 and was installed by MTS personnel in July of that year. Students began to use the equipment in August and by September were sufficiently proficient to demonstrate the full capabilities of the instrument. The equipment is now fully operational and is available for use by students, faculty and staff at Stanford.

AND FORMS OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT
WASH. D. C. 20540-0001
THE INFORMATION CONTAINED HEREIN IS UNCLASSIFIED
DATE 10-10-2017 BY SP2 TANIA RER 150-12
Distribution is unlimited.
cc: SOC - Director, Governor
1112F, Technical Information Division

The equipment provided by the grant will permit a new kind of mechanical testing to be done at Stanford University. Multiaxial mechanical tests can be done by using the combined tension-torsion capabilities of the new instrument. This will permit not only a more complete investigation of the mechanisms of deformation and fracture than can be done with axial testing alone but also a study of structural material behavior under the complex loading conditions which arise in practice. The torsional testing mode will also permit studies of deformation at large strains, such as those which arise in metal forming operations.



Accession For	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unpublished	<input type="checkbox"/>
Justification	
By	
Distribution	
Availability Codes	
Dist	Serial
A-1	

Table 1
Integrated Multiaxial Testing System
Equipment Purchased and Distribution of Cost Sharing

<u>Funding Source</u>	DOD/URIP	DOE	ME/SU	MSE/SU	SE/SU	TOTAL
<u>Equipment Item</u>						
Series 809 Automated Axial-Torsional Testing System	\$125,000	-	\$4,000	\$6,250	\$22,500	\$157,750
Axial-Torsional Extensometer MTS 632.22	-	\$9,750	-	-	-	\$9,750
Axial-Torsional Grips MTS 64AT.22	-	\$9,000	-	-	-	\$9,000
SX-RA50-EX Microcomputer PDP 11/23	-	\$9,831	-	\$3,298	-	\$13,129
HP 7475A Plotter	-	-	-	\$1,042	-	\$1,042
Tax, Shipping	-	\$1,419	-	\$6,142	-	\$7,561
Totals	\$125,000	\$30,000	\$4,000	\$16,732	\$22,500	\$198,232

DOE = Department of Energy (Research Grant to A.K. Miller)

ME/SU = Department of Mechanical Engineering, Stanford University

MSE/SU = Department of Materials Science and Engineering, Stanford University

SE/SU = School of Engineering, Stanford University